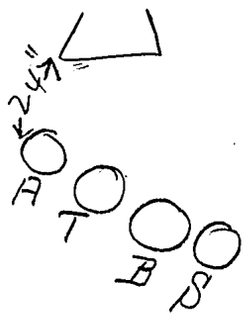
Notebook Series -- Notebooks by Edison and Other Experimenters
Recorder and Recording Experiments -- Miscellaneous Books
Notebook, N-15-11-19

This notebook was used by Edison, Absalom M. Kennedy, and others during November-December 1915 for notes on experimental recordings. The first few entries are by Edison. For subsequent entries, the details of the recording session are provided by Kennedy, E. Rowland Dawson, or other experimenters, with frequent comments by Edison on the quality and loudness of the recordings. Some of the entries include notes or drawings regarding the positions of instruments and voices, as well as the position of the recorder and horn. Others are very brief and include only the identifying number of the recorder or horn and a percentage, usually written by Edison, indicating quality and volume as compared to standard. The front cover is marked "Mr. Edison." The pages are unnumbered. Approximately 130 pages have been used.

66769
Acme Co.,
MFG. STATIONERS,
96 JOHN ST.
AND
19 PLATT ST.
NEW YORK.

Nov 19, 1915

EXP. VIII CON.



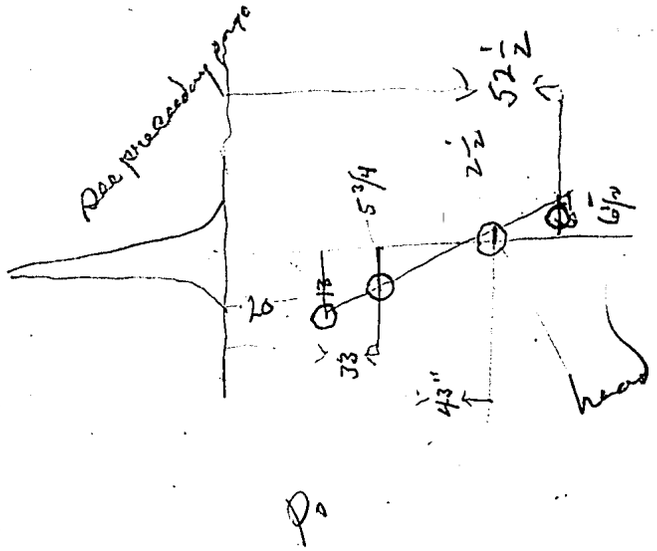
Quartet
2 Horn; Recorder # 62.

X

Pretty fair & loud
Enough for Reg lick
but blubber sounds
of Recorder NG —
Streaked Recorder #62

This horn is very mellow no muffled or barrel sounds overtones loud giving clear mellow sounds full musical

This is high water mark so far –



Quartet
Horn #2 Recorder # 9.

Same arrangement as X on preceding page no change except used Regular Wallerstein recorder.

This is best horn heard yet plenty loud enough for Reg disc no interference when voice balanced it could be fine can hear each voice even in loudest parts

Better recorder when any of mellow although voice sounds not so good

OOH

Continued I put the
Beaver board reflector
6 ft wide 8 ft high -
Right close to Raphrams
with previous stage
arrangement but
echoes Confused it
because probably tenor
1/2 way between,
to make this work each
singer would have to
have a sounding board
Its better to do away
with them & use
Cow hair

I now substitute Cow
hair partitions for
reflecting board —
Cow hair all around
but floor only has thin
Carpet + walls 15 ft
up are wood
Record is OK + beat yet
clear, in all parts no
interference, each voice
separate, — When
proper way to balance
Volume is got can
take any record

EXP. IX

We have been using horn A and speaking of it as the standard of regular recording at this time.

Mr Miller, however, says this horn has been abandoned in his studio.

We therefore had horn made according to his description of the horn he is now using, calling it horn G.

The two are now tested.

Evening Star by Dawson

HORN A

Singer 10 inches from horn

Fair to good

HORN G

Walter Miller Standard

Ringer 10 inches from horn

60% of the Volume of

A, + no bottles —

EXP. X.

In Exp 8, when using horn #48 its crooked neck was replaced by a straight neck in order to let singers, sing into horn more conveniently

Mr Edison thought possibly this change may have affected the quality of horn.

The horn is therefore tested both ways.

Kathleen Mavourneen at three feet.

HORN 48
WITH STRAIGHT NECK

100%

HORN 48
WITH DUTCHMAN'S PIPE NECK
100% possibly 105

Horn #1

100%

EXP. I CON

HORN TESTS Continued.
#1 still being used as standard.

HORN 50

RETRIAL -

~~100%~~ 100%

HORN 51

RETRIAL-

90%

C21

HORN #66

100x/1

Horn # 67

75 2/0

Horn # 68

50 %

HORN #69

10%

HORN # 70

10%

C31J

HORN #62

RETRIAL – First one had a jump in the record and you could not judge it.

105 a/d

EXP. XI.

Using an upright piano and elevating it as described on opposite page

Chopin Waltz by Miss Buchbinder

Upright Piano Horn #2

a) Piano elevated so that centre of sounding board is directly opposite horn

Piano 6 ft. from horn. Cow hair screens forming lane about 5 ft wide between horn and piano.

Not enough quality
plenty loud enough
for regular records
quality tango

b) Upright Piano Horn #2

Same position as last but with face of sounding board covered with cow-hair deadener with the exception of an 8"x24" opening.

Standard Miller
Reamer

Not so loud, seems a little better generally but not right banjo-

Must be louder for Reg disc -

Exp XII

Test of conditions as in XI, for vocal work

Evening Star – Dawson

Voice Horn #2

Piano same as last, Singer 24" from horn Standard Wells Recorder

Pretty good

Loud enough for disc

Ditto sing 4 ft from Edge horn

about 70% of loudness required for disc

EXP. XIII

RECORDER TEST, conditions same as in XI (b)

Chopin Waltz Miss Bucklinder

#9 Recorder

100

C413

#50 Reorder

110% quality

about same, perhaps slightly

worse –

EXP XIV

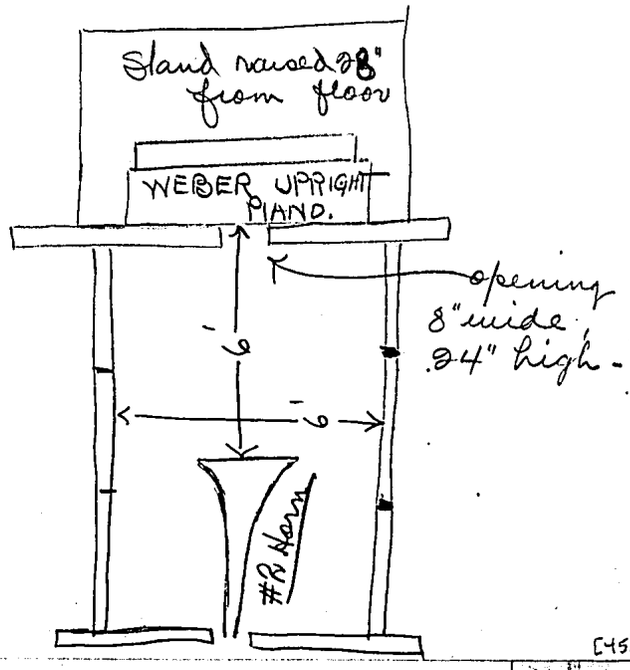
GENERAL TEST OF RECORDERS

General Test A Recorders

- 11/23/15 -

Tests of Recorders

Weber Upright Piano - on stand 28" from floor. In Cow hair booth as shown, with opening at back 8" x 24" -



Test A –

RECORDER # 9

Quality 100

Level 100

RECORDER # 73 W

Quality 105

Level 105

Given back to Werner 7-10-26

XXX

RECORDER # 2 W

Q 85

L 90

RECORDER # X-VV ✓✓
Q 90
L 90 Dual Read

RECORDER # 53 ✓✓
Q 90 Dead.
Loud 115 Loud.

RECORDER # 69 ✓✓
Q 100
L 100 Good Sound

RECORDER #44 ✓

Q 95 fine

L 115.

RECORDER #67 ✓

Q 103 sweet but spring

L 103

RECORDER #50 ✓

Quart 104 Good Quality.

L 122 very Fond

RECORDER #62 ✓

Quad 90

L 85 ✓

RECORDER #58 ✓

Q 90

L 98 Dead

RECORDER #51 ✓

Quality 110

L 115

X

RECORDER #64 ✓✓

Q 90
L 90

RECORDER # 52 ✓✓

Qual 85
Lower 90 tracked too deep

RECORDER # 60 ✓✓

Qual 90
L 100

[illegible]

RECORDER #66 ✗✓

Q 60

L 60

Made over

Bad surface ✗

RECORDER #57 ✗✓

Q 75

L 75

RECORDER #54 ✗✓

Q 95

L 95

Made over

RECORDER #55

Q 50
L 50

Park Way park in home

RECORDER #59

Q 60
L 60

Made over

RECORDER #71

Q ~~[illegible]~~ 85
L 95

Direct hook-up

Thomas Mr. Edison

RECORDER #68

Q 95

L 85

RECORDER #65

Qual ~~90~~ 65

L

RECORDER #48W

Qual 115

L 116

XX

Sent back to Denver

C613

RECORDER # 72 ✓✓
Quad 90
L 100 Shanta Thompson

RECORDER # 73 ✓✓
Q 80
L 95

RECORDER # 77 W ✓✓
Q 100 to 102
L 115.

Recorder #57
Heavy playing with chords.

Exp. XV

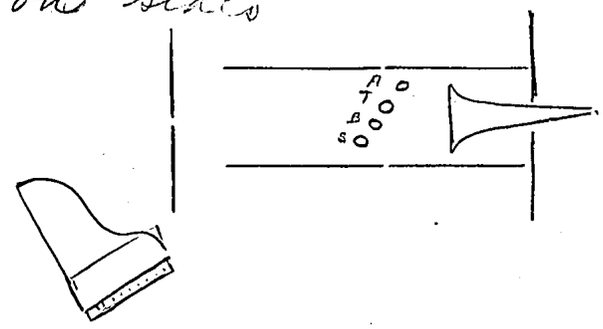
QUARTET EXPERIMENTS
(VOCAL)

Nov 24, 1915

Rigoletto Quartet.

a) Quartet.

Recorder #51 Horn #R
singers in position of Exp VIII
cow hair screens at back
and one sides



Cow hair mats were placed on
floor of booth ⓐ and in the second
record ⓑ also suspended to form
a roof to the booth.

Mr Edison thought both
records.
"Pretty Good"

C671

b) Quartet

#2 HORN WITH FLARE ADDED
Recorder #51, upright piano
in position of Exp XIV., Singers
in position of XV a.

EXP XVI

TEST FOR VALUE OF FLARE ON HORNS.

Nov 26, 1915

Kathleen Mavourneen
at three feet

HORN #43
Small square horn on which Mr Edison wanted flare put.

WITHOUT FLARE

If this is 100%

WITH FLARE

This is 250%

[91]

HORN #29
Glass Horn to which flare has been added.

WITHOUT FLARE

2 ft thus is 100%

WITH FLARE

Thus is 200%

EXP. XVII Nov 29/15

TEST FOR VALUE OF COW HAIR ROOF TO BOOTH

Recording outfit changed in position, horn now running lengthwise instead of crossways in room. New cow-hair screens also used, same having no wood exposed on face of screens.

Booth similar to XIV is arranged with the new screens; piano, however being 12' instead of 6' from horn.

Evening Otter Dawson

Rec. #51, piano 12 ft from horn, singer 10 ft, alley 6 ft wide, cow-hair mats on floor only in a and also over top in b.

a) WITHOUT ROOF

Quality 100%
Loudness 100%

b) WITH ROOF

Quality 120%
Loudness 80%

EXP XVIII

TEST FOR WIDTH OF BOOTH

Singer 10 ft from Room

Booth in a same as XVII, in b only width is changed

a) WIDTH about 6 ft

Loud 100

Quality Singer 100

b) WIDTH about 9 ft

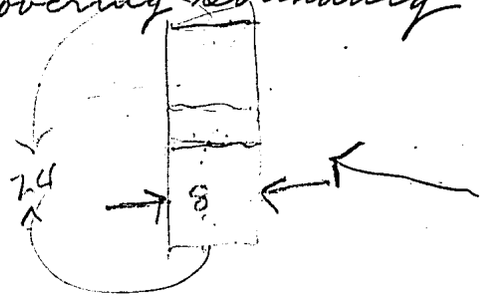
Loud 115

Quality Singer 100

Quality Piano not so good as 6 ft

EXP XIX

PIANO TEST of Conditions same as XVIII, except for opening in felt covering sounding board.



Hungarian Rhapsodie – Miss Brokbinder

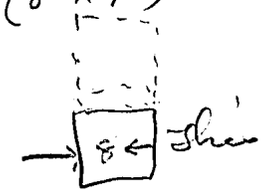
R. #51 Piano 12 ft from horn, booth 9"X12' cow hair on floor and forming roof.

Opening in front of sounding board 8"X24"

This is clearer + same loudness as Reg to quad → Y Chunk

Clearer – but recorder not sensitive enough

Same as 6002 but hole cut in 1/2 (8"X9")



Quality good, but some weaker vowels the 8X24 + more sensitive recorder

+ Better Piano Volume if could be freely open

EXP XX

TEST OF RECORDERS

Waltz - Miss Buchbinder

Recorder # 54

If 51 is 100% This - .25%

Recorder # 59

20%

Recorder # 66

40% Quality very good

Recorder # 70

35% - Knocked too Light! Quality fair

[81]

EXP ~~XX~~ CONT.

TEST OF RECORDERS

Recorder # 9

Recorder # 67

Recorder # 73

Recorder # 69

Recorder #44

Recorder #50

EXP XXI

TEST OF SHELLAC USED INSTEAD OF WAX TO HOLD TAIL ON DIAPHRAM

Evening Star ERD

Piano and booth as in XIX a.

Recorder # 65

Singer at 6 ft from horn

a) BEFORE 1ST CHANGE
(Tail held in place with wax)

Not blub as test last night — acoustic was made it less sensitive probably by contraction of Lac

b) AFTER 1ST CHANGE
(Tail held in place with shellac)

No changes

EXP ~~XXI~~ CON.

TEST OF RECORDER
#65 WITH TAIL
HELDON WITH SHEWAC

Recorder #65
after 1st Change

SINGER AT 2 FT.

SINGER AT 70 FT.

EXP XXI CON.

TEST OF Recorder #65
WITH ONE COAT OF
SHELLAC ON
DIAPHRAM.

Recorder #65
After 2ND. CHANGE
(One Coat of Shellac on Diaphram)

a) Singer at 6 ft.

No blub –

Not so resolution as wanted

Extra Coat Shellac –

b) SAME As a.
Singer at 2 ft.

no blub –

c) SAME As a.
Singer at 10 ft.

No blub –

C913

Exp XXII.

Recorder Test of #66

Recorder #51 (Standard)
Singer at 6 ft

Recorder #66
Singer at 6 ft

Recorder #66
Singer at 2 ft

Recorder #66
Singer at 10 ft

EXP XXIII

TEST OF RECORDERS

Recorder #51 @ 2 ft
100% Loud
100 Quality

Recorder #51 @ 10 ft
~~100% Loudness~~ do

Recorder #65 @ 2 ft
105 Loud
95 Qual —

Recorder #65 @ 10 ft
do

Recorder #66 @ 2 ft
Loudness 80
Clearer - Quality 105

Recorder #66 @ 10 ft
do

Recorder #70 @2 ft
Loud 95
Quality 95

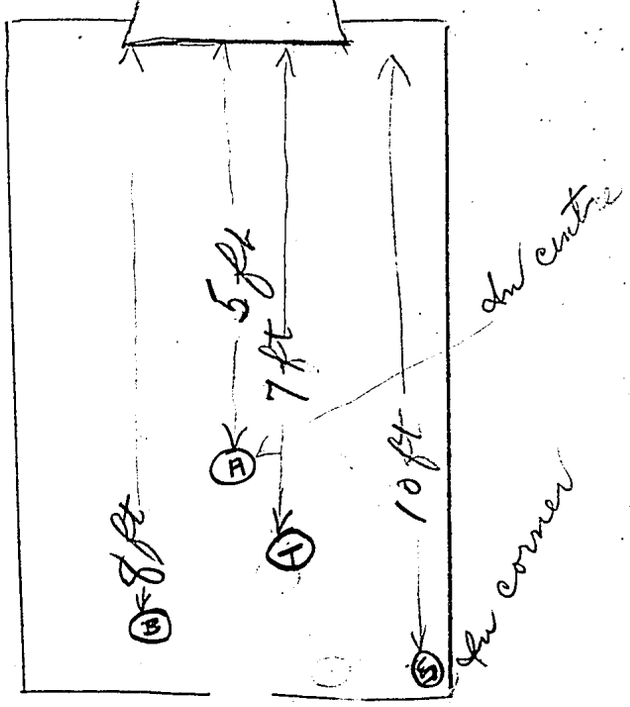
Recorder #70 @ 10 ft
do

Recorder #73 @ 2 ft
(This recorder has large cork)
Loud 95
Quality 90

Recorder #73 @ 10 ft
do

EXP ~~XXIV~~
QUARTET

Recorder 51
Position A



Position A

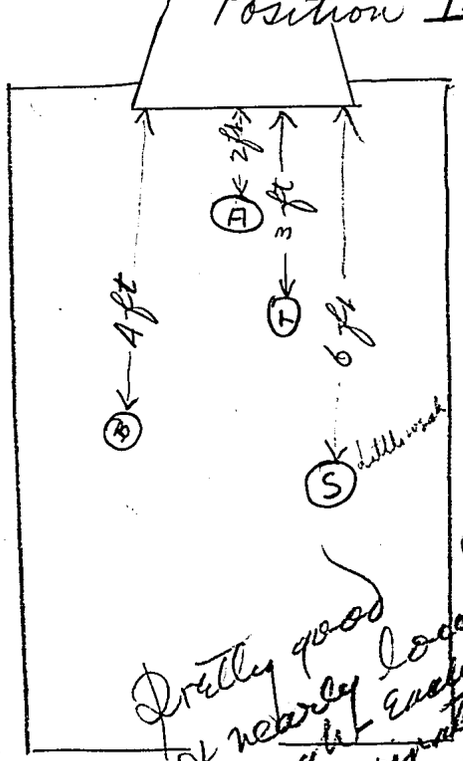
See Next Page

Mr Edison Thought Pos B the best
Poc C next and Pos A the worst.
but thought all were
"Fairly Good"

[101]

XXX Expt

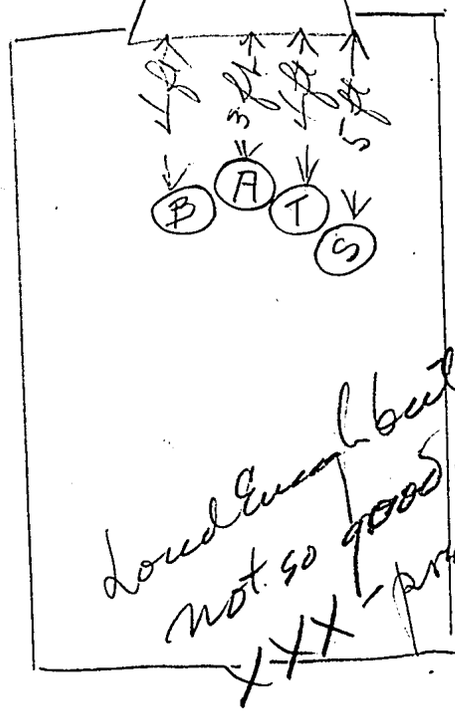
Recorder 51
Position B



POSITION B

See Opposite Page
and also Next Page

Recorder 51
Position C



Position C

EXP ~~XXV~~

RECORDER TEST

Recorder #51
100 Loud
100 Qual

Recorder #57
110 Loud
115 Qual

Recorder #73
Blubs

Recorder #70
Blubs — Loud 80

Recorder #55
Quality 75
Loud 80

#57
Loud 80
Quality 75

Mr Edison thinks #57 the "best yet" and orders it to replace #51 as standard

Exp XXVI
Recorder Test

Sang as loud as she could head in horn only jumped out a little, & scarcely noticed it in hearing but shows in meters

Recorder #57
57 best yet

Recorder #54
Tracked too deep or it scratches

Recorder #70
Loud 90
Quality 80

Recorder #55
Loud 7½
Quality 7½

Recorder #73
Scratches

Recorder #66
Nearly as good as 57
but little scratching

[111]

#57

10 ft Blubs —
need tightening
100% Void —

#65

90% Vol —
Quality 100

#75

Blubs
90 Void —

EXP ~~XXVII~~

RECORDER TEST

Carry Me Back to Ole Virginia

Dec 9/15

Booth rebuilt today, to eliminate all cracks and leaks where tone might escape from booth. Screens also placed on roof of booth, replacing mats which heretofore been stretched across top to form roof. Size of booth remains 9'x12' and positions of piano horn etc remain the same.

#2 horn with large brass flare added has been used exclusively in all experiments since EXP ~~XVI~~ and continues to be so used.

Recorder #57

Reg

Recorder #76

110 loud but scratchy + rag

10 ft 110, scratchy rag

must get out Scratchy Tracks

Recorder #79

90 loud

120 Quality no double waves as in all others including 51 & 57

EXP XXVIII

RECORDER TEST

Dec 10/15

Recorder #57

100% Loud
100 Quadrly

Recorder # 76
(Tightened)

Blebs at 2 ft-
105 at 10 ft Loud 105

Recorder # 79
(Tightened)

Loud 75
Quadrly 75

Recorder # 74
Loud 80 -
Quality 70

Exp XXIX

Recorder Test

Dec 11/15

Recorder #57

Recorder #74

N. G.

Recorder #76

Has Squeak

Recorder #79

About equals 57

John Ott Recorder

A Little Better than 79

C120

EXP XXX

Recorder Test

Evening Star
E.R. Dawson

Dec 14/15

1½/1000 Recorder #57

6" exposed 100 Loud — at 10 ft pounds allowed only 1 single blow

Piano OK 10 ft balanced + ok in practice 7 ft or 6 ft will give record as loud as wanted — 8 ft is OK

.0015 Recorder #74
(Surface)

75 Loud Sensitive.

.0025 Recorder #76

90 Loud

Recorder #77

95 — Loud

Dec 14, 1915

Recording Outfit moved from laboratory to #4 building, where booth similar to the one before used has been constructed, a little more substancially built however.

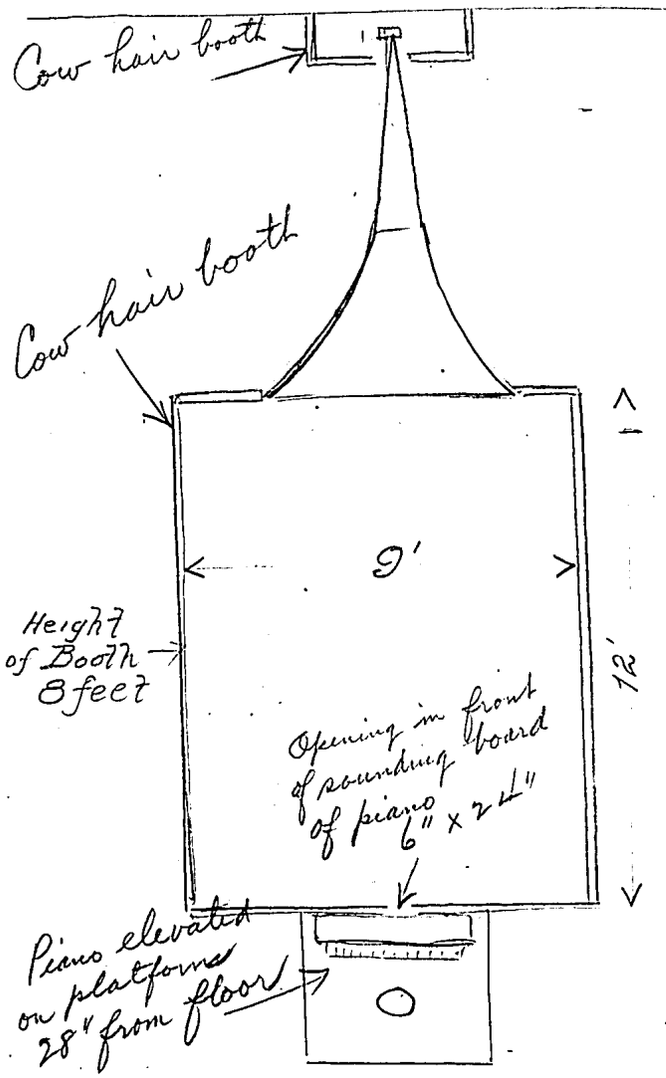
The height of the booth has been raised a foot to accomodate the new horn which is larger than the last one but of like shape and material.

Booth of padded screens is now built around the recording machine 3' x 7'. A screen also laid across the top forms padded roof.

Cow hair matting is laid on floor as before.

Horn is suspended from a timber frame by a rod on ball bearings.

Exp ~~XXX~~ was made under these conditions.



EXP ~~XXXI~~

RECORDER TEST

Dec 15/15

Last Race of Summer
Miss Ayers

Wednesday
65 need a forward -

Recorder #57
1½/100 - steel jap needle
Forward -
Loud 100 quality 100

Recorder #65
Diaphram $\frac{15}{16}$" x .0015"
Aluminum Disc
Dia
Loud 120
110
quality at 2 ft much better than 57

Recorder #75
Diaphram $\frac{15}{16}$" x .0015
Aluminum Disc
Dia
110
105

Recorder #77
Diaphram $1\frac{1}{16}$" x .0015
al disc
Dia
95
95 Scratchy.

Recorder #78
Diaphram $1\frac{1}{16}$" x .0015
al Disc
Dia
75
100

65 is considerable more ~~full~~ density than 57, but on cells at 5 ~~6~~ [illegible] [illegible] twice

EXP ~~XXXII~~

TEST OF SILK CURTAIN
OVER FRONT OF HORN
Dec 16/15

Curtain of Silk stretched across booth in front of horn

WITHOUT SILK

At 2 feet
At 10 feet
Piano

WITH SILK

At 2 feet
At 10 feet
Piano

Silk did not make any difference

Exp ~~XXXIII~~

RECORDER TEST

Dec 16/15

Recorder #65

Recorder #77 65B 1/1000

Dia 15/16" x .001"

Too thin dia

not chrom —

Recorder #78 65B Deep

Dia 15/16" x .001

1/2 load of 77 -

Recorder #79

Dia 15/16 x .001 Mica

Load 80

Quality poor

EXP XXXIV

TEST OF CHIMES

Dec 16/15

CHIMES #65

AT 2 FEET

Swell is Continuous & cant good

No blue

OK

CHIMES

AT 8 FEET #65

No blue OK

Swell is very much less & dont bother much

should be 10 ft or more

EXP. XXXX

Test of 65 model Recorders

Dec 17/15

#65

100 Loud

Quality 90

65A (54)

90 Loud

100 quality

#65B (74)

Loud 40

These recorders were all heard by playing a tuba within 2 ft

EXP XXXVI

Quartet Dec 17/15

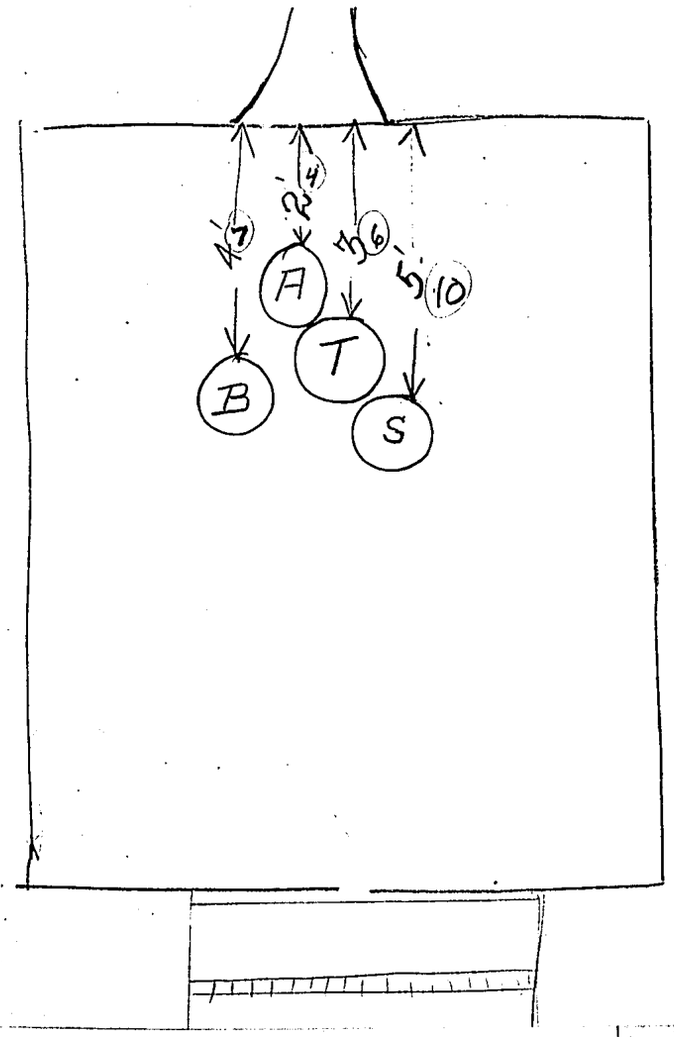
Pos A Recorder #57

Too close to Storm

Pos A Recorder #75

More sensitive than 57 but Mr Edison says use 57 today

Pos I

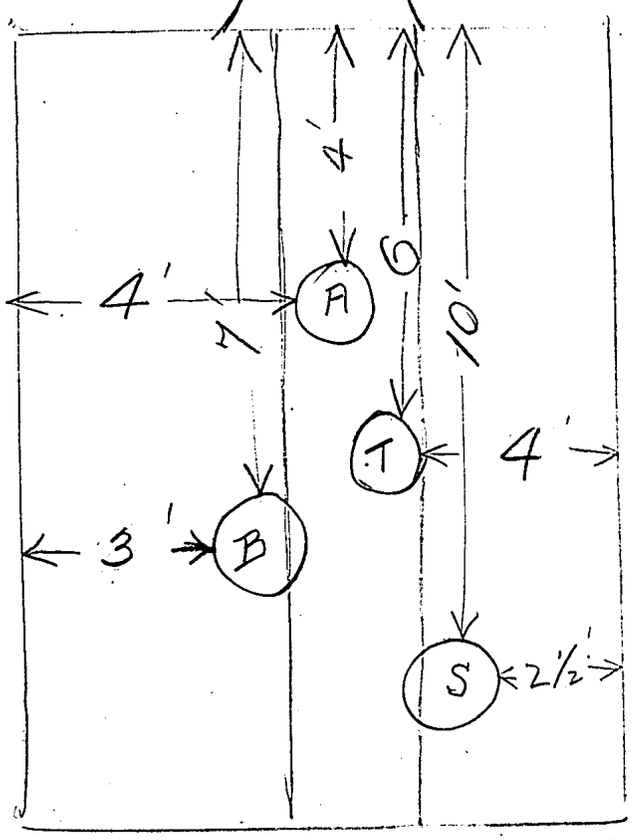


Very Much Better.

Pretty good in fact

Record for Blue Amberol made in this position.

Pos. II.



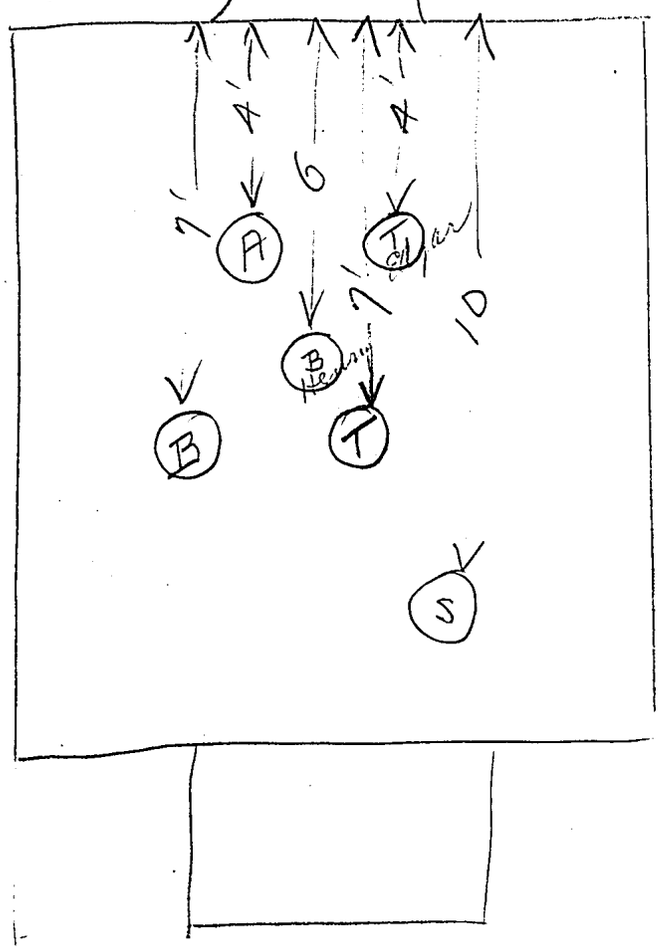
EXP XXXVII

SEXTET

Out of Balance

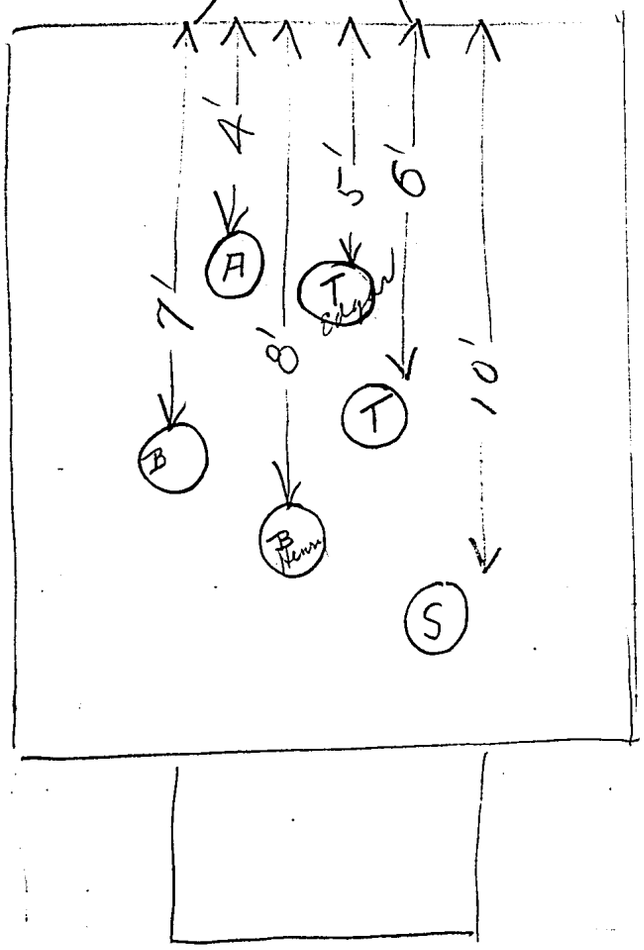
Henry too loud

POS I



Balance Better
but not right yet

Pos II.



EXP. ~~XXXVIII~~

RECORDER TEST

Dec 15/15

Evening Star
Dawson

RECORDER 57

100 L
100 Quad

Recorder A 65
100 Loud
100 Quad – Demcalm

Bad –

Recorder. A 66
80 Loud 2 ft
at 10 ft 100 Loud

Recorder B 69
100 hand at 10 ft
90 at 2 ft.

Recorder # B 73

Dorchester
much

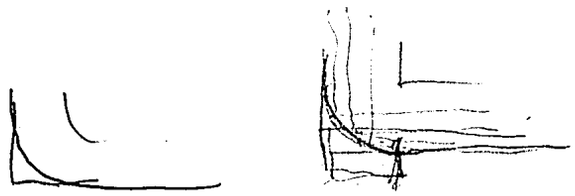
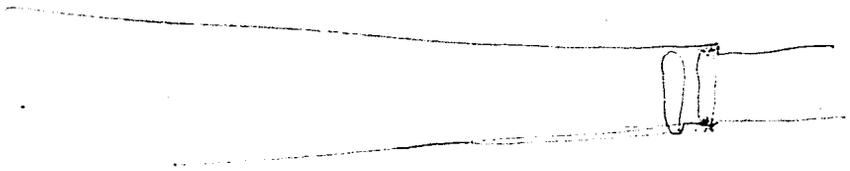
Recorder # B 77
at 2 ft 110
at 10 ft 75
Nosereach —

Recorder #57

Standard

Recorder #78
Celluloid Diaphragm

Recorder #73
Fish Bladder Diaphragm

Exp XXXIX

John Ott Recorder